

CLAIMS

What is claimed is:

1. A method for establishing time at a first basestation in a cellular communication system, said method performed in a mobile cellular communication station, said method comprising:

determining a position information of said mobile cellular communication station, wherein a location of said mobile cellular communication station is determined from said position information;

determining a time indicator which represents a time-of-day at said mobile cellular communication station, wherein said time indicator is determined relative to a signal which is available at said first basestation;

transmitting at least one of said position information and said location, and transmitting said time indicator from said mobile cellular communication station, said time indicator and at least one of said position information and said location being used to establish a time at said first basestation such that said first basestation is synchronized to other basestations in said cellular communication system.

2. A method as in claim 1 wherein said mobile cellular communication station comprises a satellite positioning system (SPS) receiver which determines said position information which at least comprises a pseudorange to a SPS satellite and wherein said signal which is available at said first basestation is a cellular communication signal which is transmitted from said first basestation to said mobile

cellular communication station, and wherein said time indicator is associated with a marker in said signal.

3. A method as in claim 2 wherein said time indicator comprises at least one of a sampling of an SPS signal received by said SPS receiver and a time-of-day message in said SPS signal.

4. A method as in claim 3 wherein a location server receives said position information and determines said location and provides said position to said first basestation.

5. A method for establishing time at a first basestation in a cellular communication system, said method being performed remotely relative to a mobile cellular communication station, said method comprising:

- receiving a time indicator, which represents a time-of-day at said mobile cellular communication station, from said mobile cellular communication station, wherein said time indicator is determined relative to a signal which is available to said first basestation;
- determining a time at said first basestation from said time indicator such that said first basestation is synchronized to other basestations.

6. A method as in claim 5 wherein said signal is a cellular communication signal which is transmitted from said first basestation to said mobile cellular communication station.

-21-

7. A method as in claim 6 further comprising:
receiving a location of said mobile cellular communication station, wherein
said time at said first basestation is also determined from said
location of said mobile cellular communication station and from a
known, predetermined location of said first basestation.
8. A method as in claim 7 wherein said location is not predetermined as said
mobile cellular communication station is not fixed and said location and said known
predetermined location determine a propagation delay between said mobile cellular
communication station and said first basestation.
9. A method as in claim 8 wherein said other basestations synchronize to said
first basestation by receiving other time indicators from at least one of said mobile
cellular communication station and other mobile cellular communication stations
and wherein said other time indicators and said time indicator are based upon a same
time standard.
10. A method as in claim 9 wherein said same time standard is a Global
Positioning System time.
11. A basestation apparatus for use in a cellular communication system, said
basestation apparatus comprising:
a wireless cellular transceiver;
a network interface coupled to said wireless cellular transceiver; and
a clock coupled to said wireless cellular transceiver, said wireless cellular
transceiver receiving a time indicator from a remote mobile cellular

-22-

communication station which represents a time-of-day at said mobile cellular communication station, wherein said time indicator is determined relative to a signal which is available to said basestation apparatus and wherein a time for said clock is determined from said time indicator such that said basestation apparatus is synchronized to other basestations.

12. A basestation apparatus as in claim 11 wherein said signal is a cellular communication signal which is transmitted from said basestation apparatus to said mobile cellular communication station.

13. A basestation apparatus as in claim 12 wherein said network interface transfers land based communications to said mobile cellular communication station through said wireless cellular transceiver and wherein said wireless cellular transceiver receives a location of said mobile cellular communication station, wherein said time for said clock is also determined from said location and from a known, predetermined location of said first basestation.

14. A basestation apparatus as in claim 13 further comprising:
a digital processing system coupled to said clock and coupled to at least one of said wireless cellular transceiver and said network interface, said digital processing system determining a propagation delay from said location and said known, predetermined location, and using said propagation delay and said time indicator to set said time on or provide a correction to said clock.

-23-

15. A basestation apparatus as in claim 13 wherein said other basestations synchronize to said basestation apparatus by receiving other time indicators from at least one of said mobile cellular communication station and other mobile cellular communication stations and wherein said other time indicators and said time indicator are based upon a same time standard.

16. A mobile cellular communication station comprising:
a wireless cellular transceiver;
a satellite positioning system (SPS) receiver coupled to said wireless cellular transceiver, said SPS receiver determining a time indicator which represents a time-of-day at said mobile cellular communication station and which is determined relative to a signal which is available to a basestation, and wherein said wireless cellular transceiver transmits said time indicator to said basestation and wherein said time indicator is used to establish a time at said basestation such that said basestation is synchronized to other basestations which are capable of wireless communication with said mobile cellular communication station.

17. A mobile cellular communication station as in claim 16 wherein said SPS receiver determines a location and said wireless cellular transceiver transmits said location to said basestation and wherein said signal is a cellular communication signal which is transmitted from said basestation to said mobile cellular communication station and wherein said time indicator is associated with a marker in said signal.

-24-

18. A mobile cellular communication station as in claim 16 wherein said time indicator is a time-of-day message in an SPS signal which is received by said SPS receiver.